



Sharpening Tools for the Next California Water Plan Update

Annual Meeting of the
California Water and Environmental
Modeling Forum
February 27, 2007

Session Topics

- Delivering Numbers with SWAN
 - Rich Juricich
- Conceptualizing California's Water Management System with UML
 - Morteza Orang and Dong Chen
- Application of WEAP to Explore Future Water-Related Scenarios
 - Mohammad Rayej
- New Investments in Water Portfolios
 - Todd Hillaire

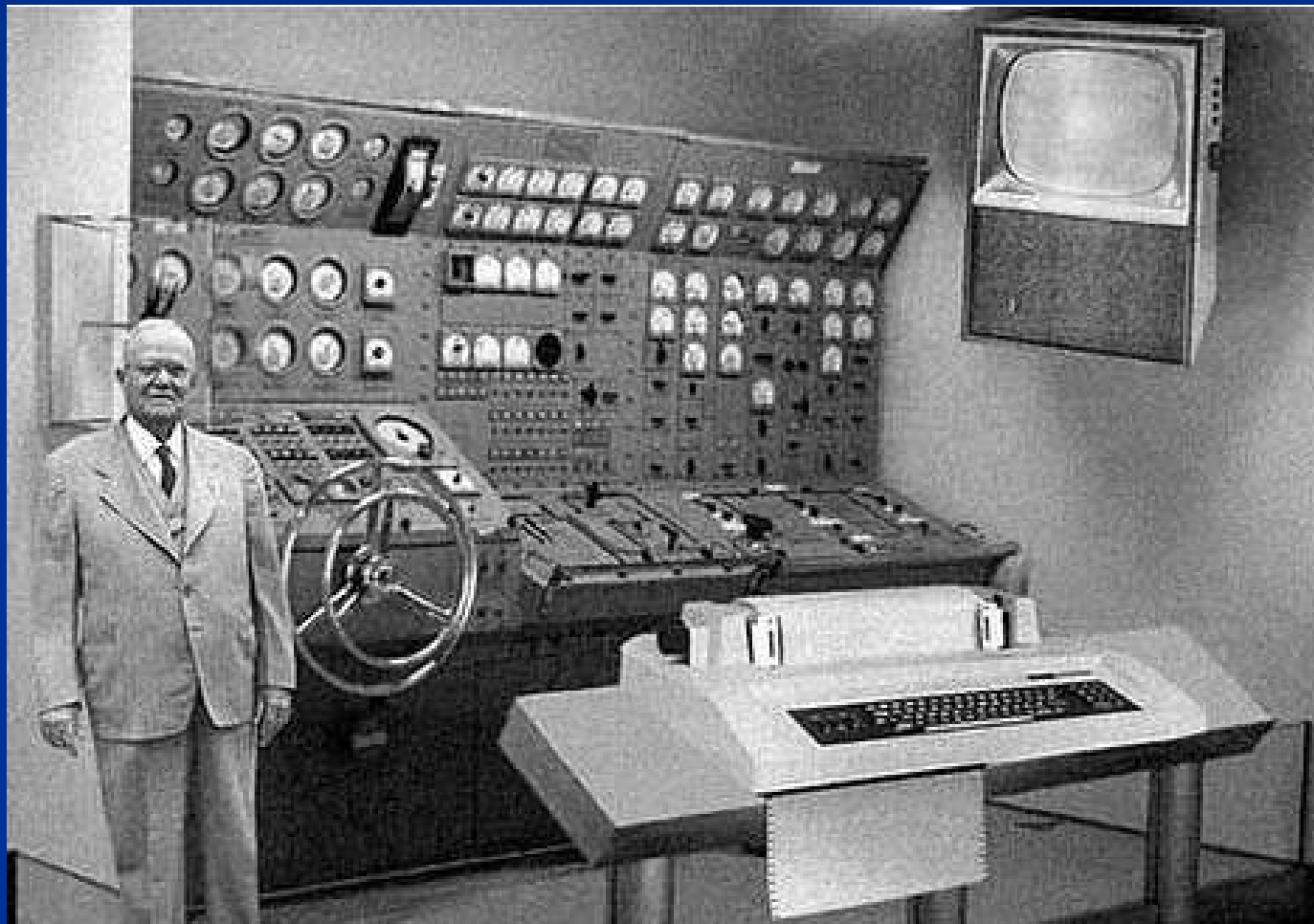


SWAN Formation

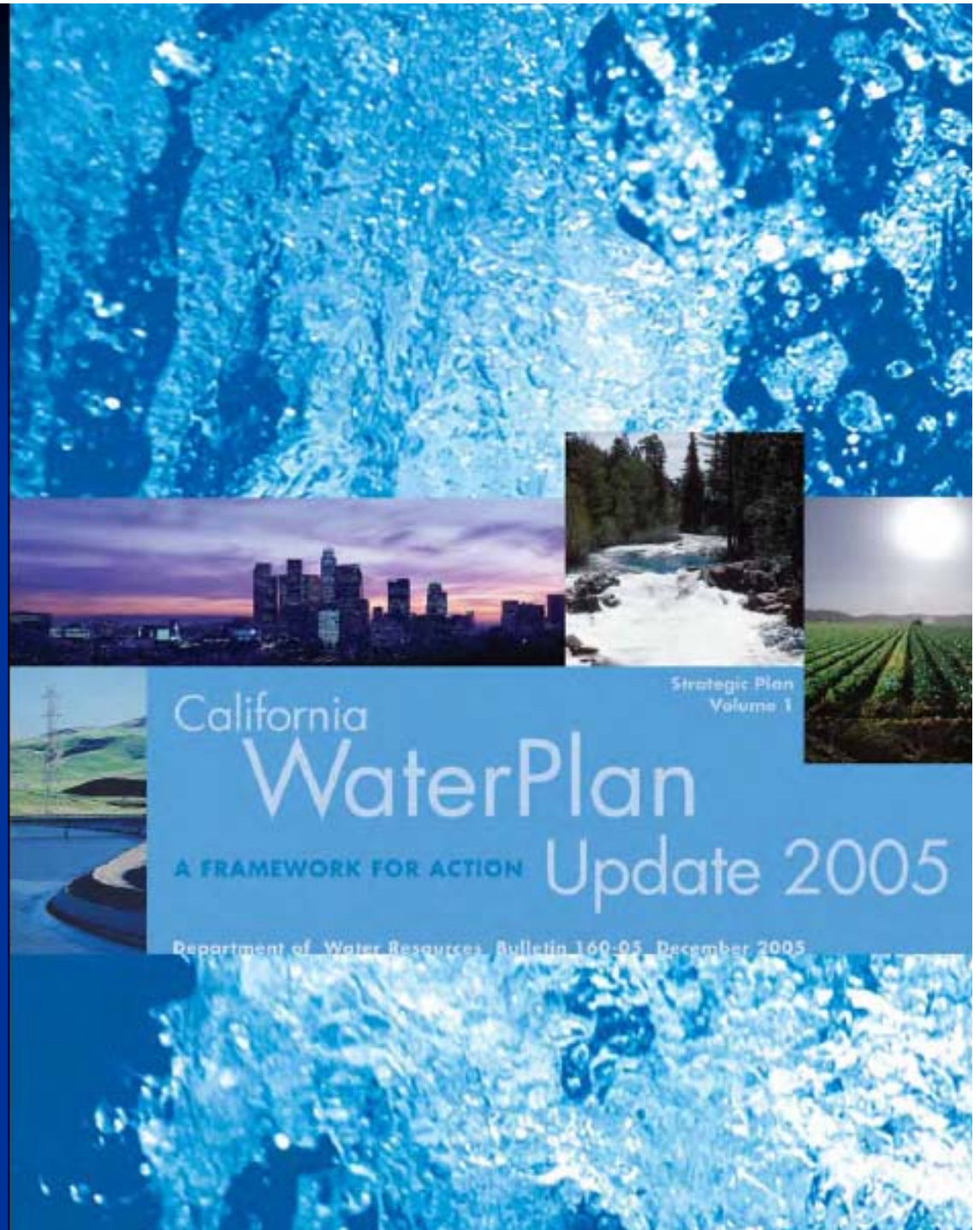
- Improving Analytical Tools and Data for Statewide and Regional Planning
 - Where we are, where we want to be, how to get there
- What is SWAN
 - Purpose, Participation, Expertise, etc
- Water Plan Process and Schedule



Improving Analytical Tools and Data For Statewide and Regional Water Planning



Outcomes of California Water Plan Update 2005



Recommendation 11

2005 California Water Plan

“DWR and other state agencies must improve data, analytical tools, and information management and exchange needed to prepare, evaluate, and implement regional integrated resource plans and programs in cooperation with other federal, tribal, local, and research entities”

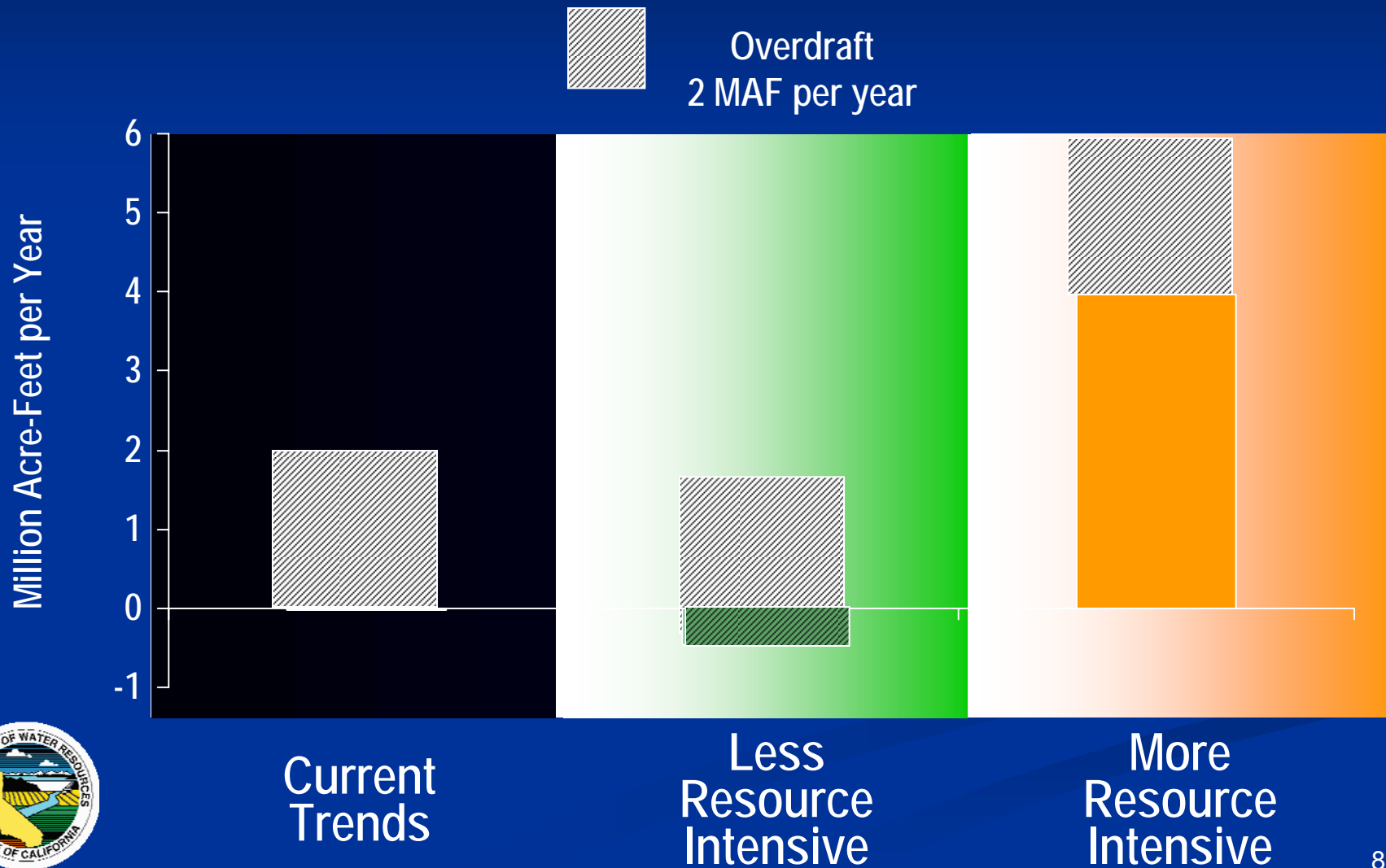


New Features

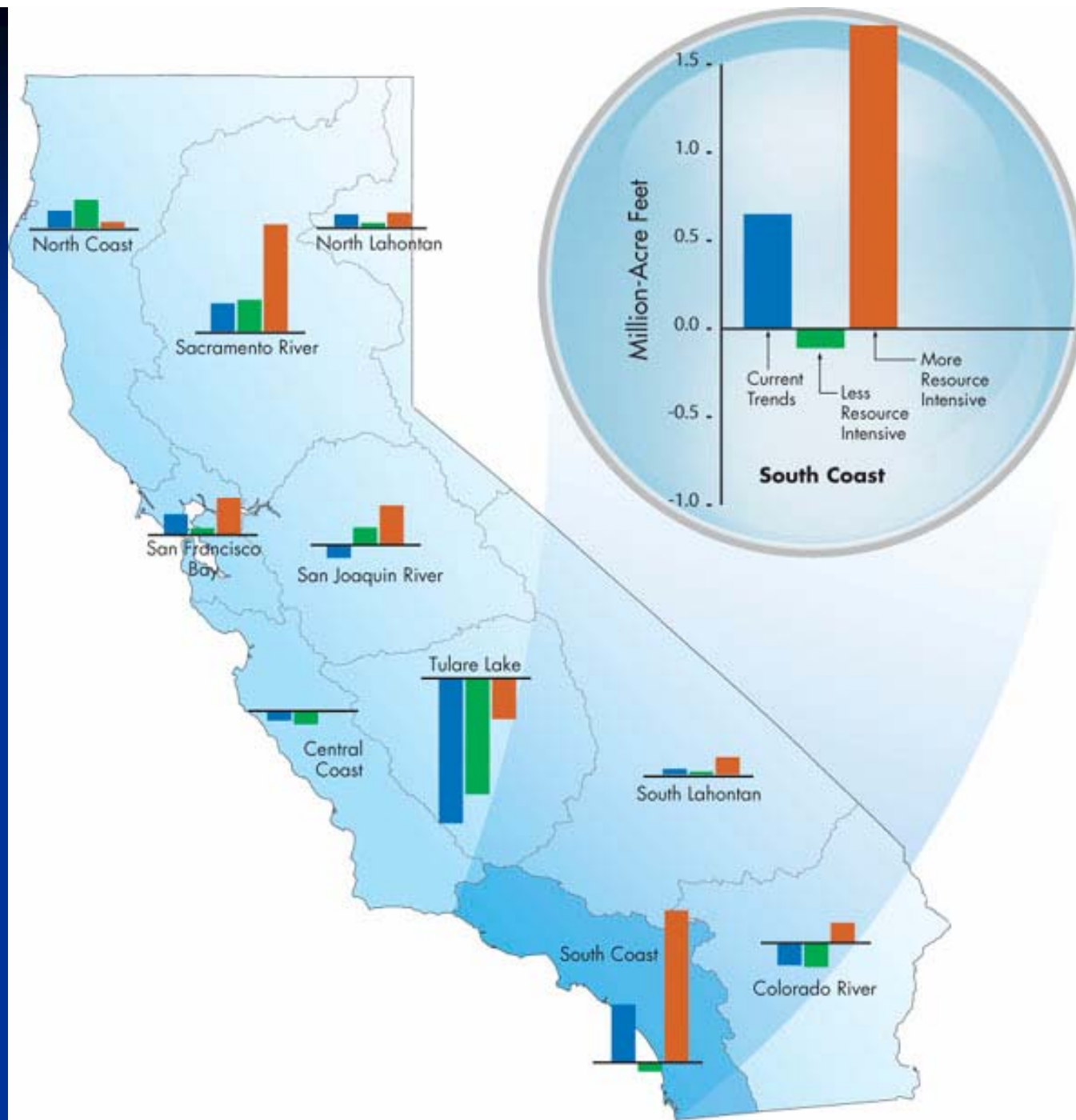
- Water Portfolios
 - Over 80 data categories of water supply & use for 1998, 2000 & 2001
- Regional Reports
 - For 10 hydrologic regions, the Delta, and Mountain Counties
- Multiple Future Scenarios
 - Plausible yet different base conditions to plan for uncertainties
- 25 Resource Management Strategies
 - Tools for water managers & resource planners



Scenario Demand Changes Statewide Plus Groundwater Overdraft



Scenario Demand Changes by Region



Resource Management Strategies

Reduce Water Demand

- Agricultural Water Use Efficiency
- Urban Water Use Efficiency

Improve Operational Efficiency & Transfers

- Conveyance
- System Reoperation
- Water Transfers

Increase Water Supply

- Conjunctive Management & Groundwater Storage
- Desalination –Brackish & Seawater
- Precipitation Enhancement
- Recycled Municipal Water
- Surface Storage – CALFED
- Surface Storage - Regional/Local

Improve Water Quality

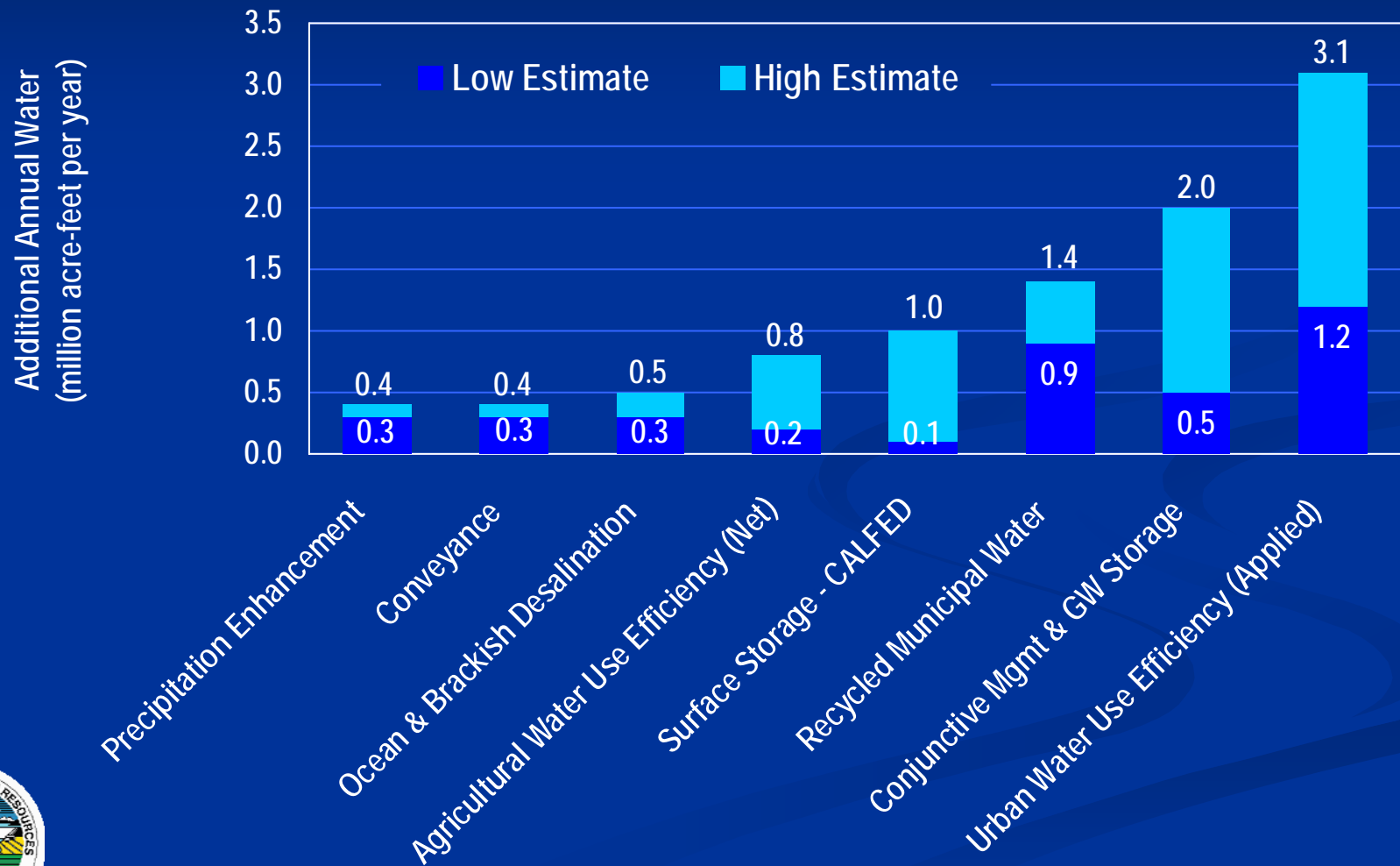
- Drinking Water Treatment and Distribution
- Groundwater/Aquifer Remediation
- Matching Quality to Use
- Pollution Prevention
- Urban Runoff Management

Practice Resource Stewardship

- Agricultural Lands Stewardship
- Economic Incentives (Loans, Grants, and Water Pricing)
- Ecosystem Restoration
- Floodplain Management
- Recharge Areas Protection
- Urban Land Use Management
- Water-Dependent Recreation
- Watershed Management



Range of Additional Water by 2030 for Eight Resource Management Choices



Update 2005 Parking Lot (items not addressed)

- More local detail for Regional Reports and Water Portfolios
- More groundwater information
- Roll-up Urban Water Management Plans
- Include climate change, water quality, and energy relationships
- Improve rep. of environmental water
- Improve data QA/QC, transparency



Where We Want To Be



Multiple Quantitative Views

- ***Water Portfolios***

- Describe where water originates, where it flows, and what it is used for based on recent data

- ***Future Baseline Scenarios***

- Describe expected changes by 2030 if water managers do not take additional action

- ***Alternative Response Packages***

- Describe packages of promising actions, predict expected outcomes, and compare performance under each scenario



The Point

- Multiple views of water management system will:
 - Help inform policy discussions
 - Promote rational decisions regarding investments to meet objectives
 - Support regional planning
 - Support statewide planning



Analysis in Phases

Update 2005

- Water portfolios of current conditions
- Describe quantitative approach
- Illustrate part of the approach – future scenarios

Future Updates

- Refine quantitative approach
- Refine future scenarios
- Quantify response packages
- Compare performance



Delivering Numbers with SWAN

Statewide Water Analysis Network



What is SWAN



Purpose

- Primary technical advisory group for the California Water Plan
 - Provide recommendations on improvements to analytical tools and data
 - Through Water Plan, recommendations will guide other statewide and regional planning efforts
 - Provide feedback on proposals by Water Plan team



How SWAN Can Help

- Build common conceptual understanding of water management system
- Identify appropriate scales for Water Plan analysis
- Develop strategy for making water planning information transparent
- Develop guidelines for integrating information



SWAN Participants

- Federal, State, and local agencies
- Non-governmental organizations
 - CWEMF, Environmental
- University faculty and students
- Indian tribes
- Technical consultants
- Facilitation



SWAN Expertise

- Estimating future agricultural, urban, and environmental water demand
- Estimating future management responses
- Considering uncertainty about future climate conditions
- Identifying relationships between management of water, water quality, and energy
- Data management, visualization, and exchange



SWAN Pilot Studies

- Integrating UWMP's with Water Plan – SWAN Workshop (January 2007)
- Common Schematic – TBD
- Common Conceptual Model using Object Oriented Modeling – SWAN Workshop (December 2006)



Related Pilot Studies

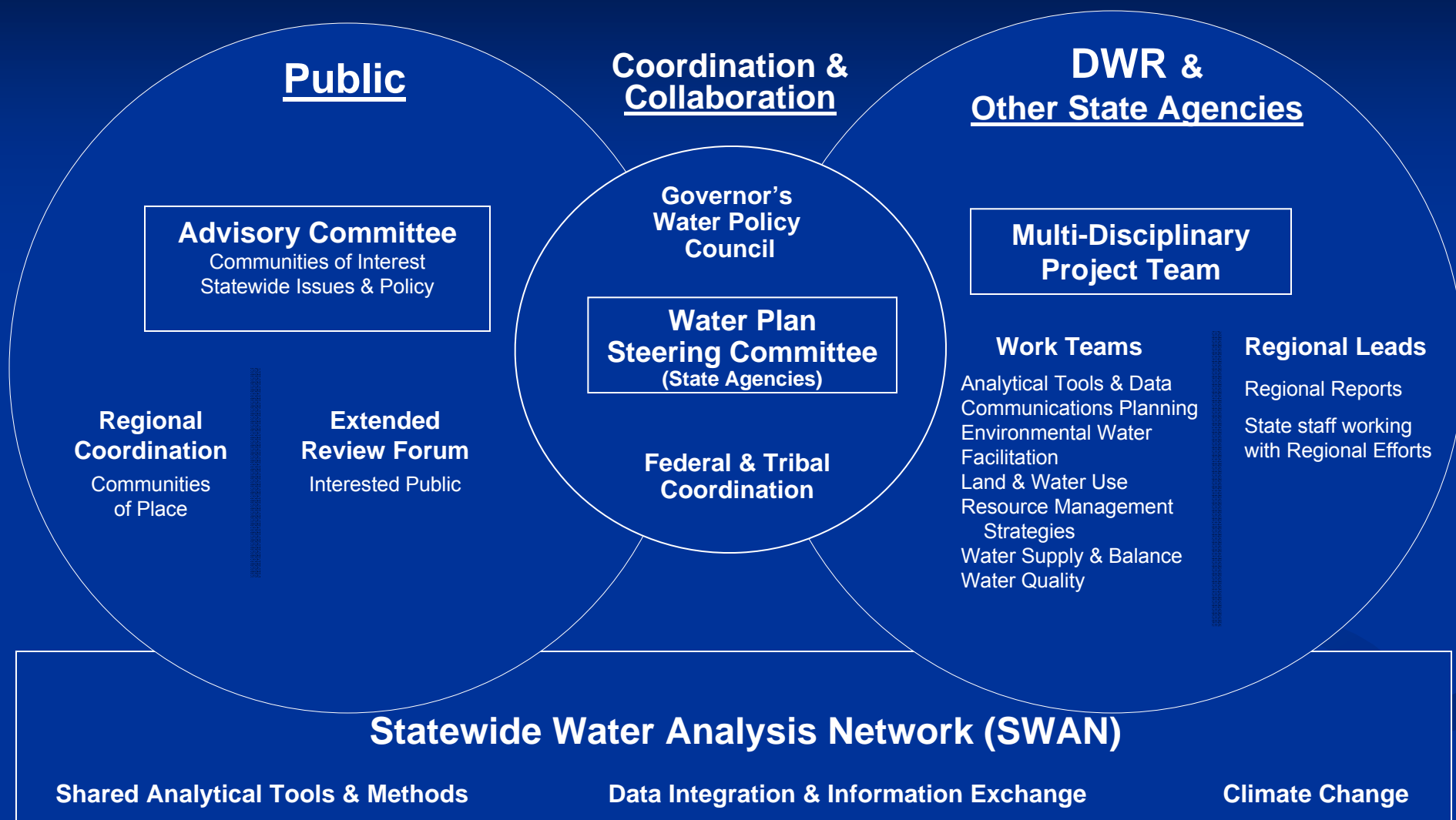
- Southern California Water Demand Study – RAND/UCSB (Completed June 2006)
- WEAP Climate Change and Decision Making under Uncertainty – IEUA / RAND (March 2007)
- WEAP Climate Change Sac Valley – DWR / SEI / NCAR / USEPA (March 2007)



Water Plan Process and Schedule



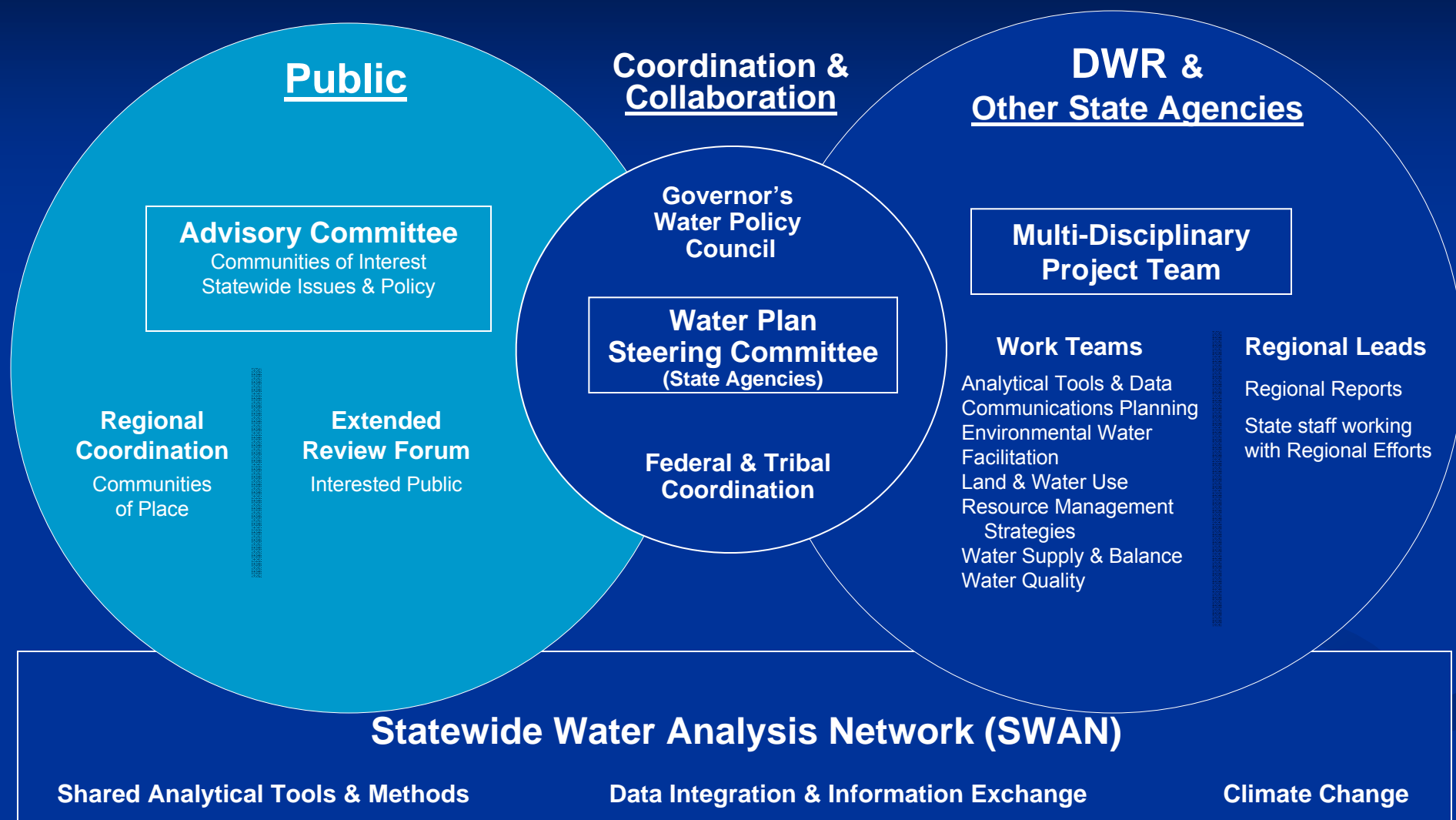
California Water Plan Update Project Organization and Public Process



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Updated 10-24-2006

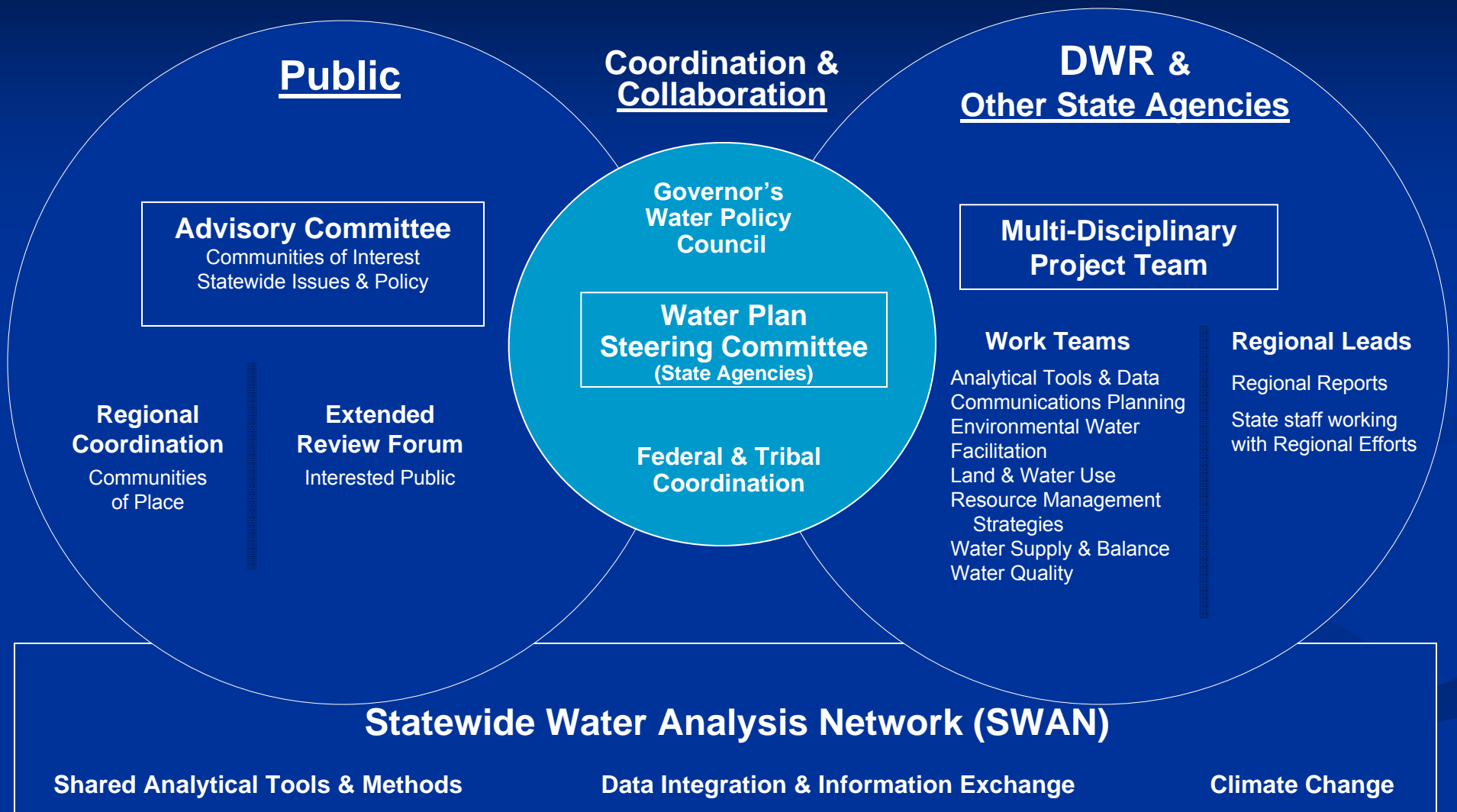
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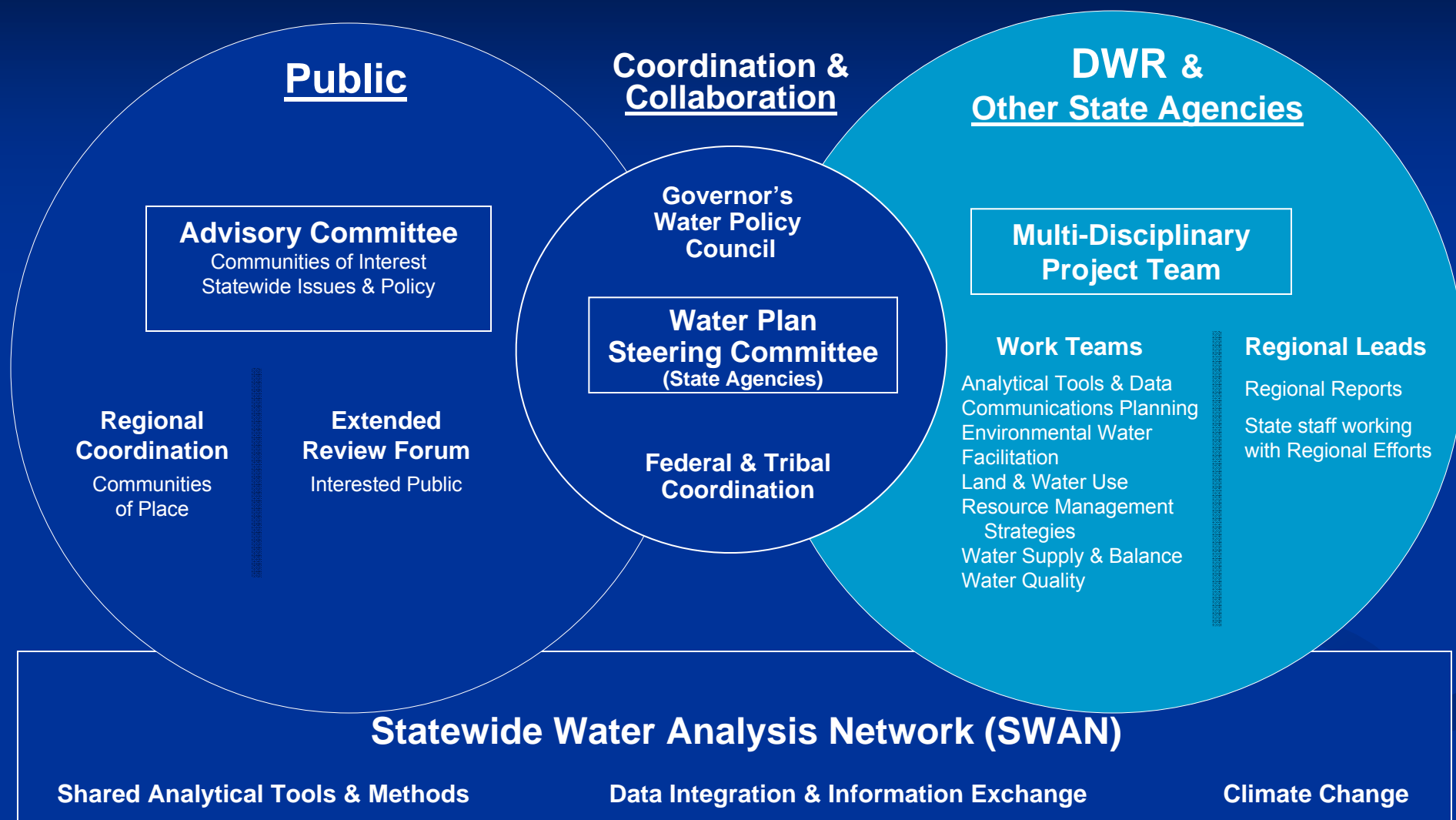
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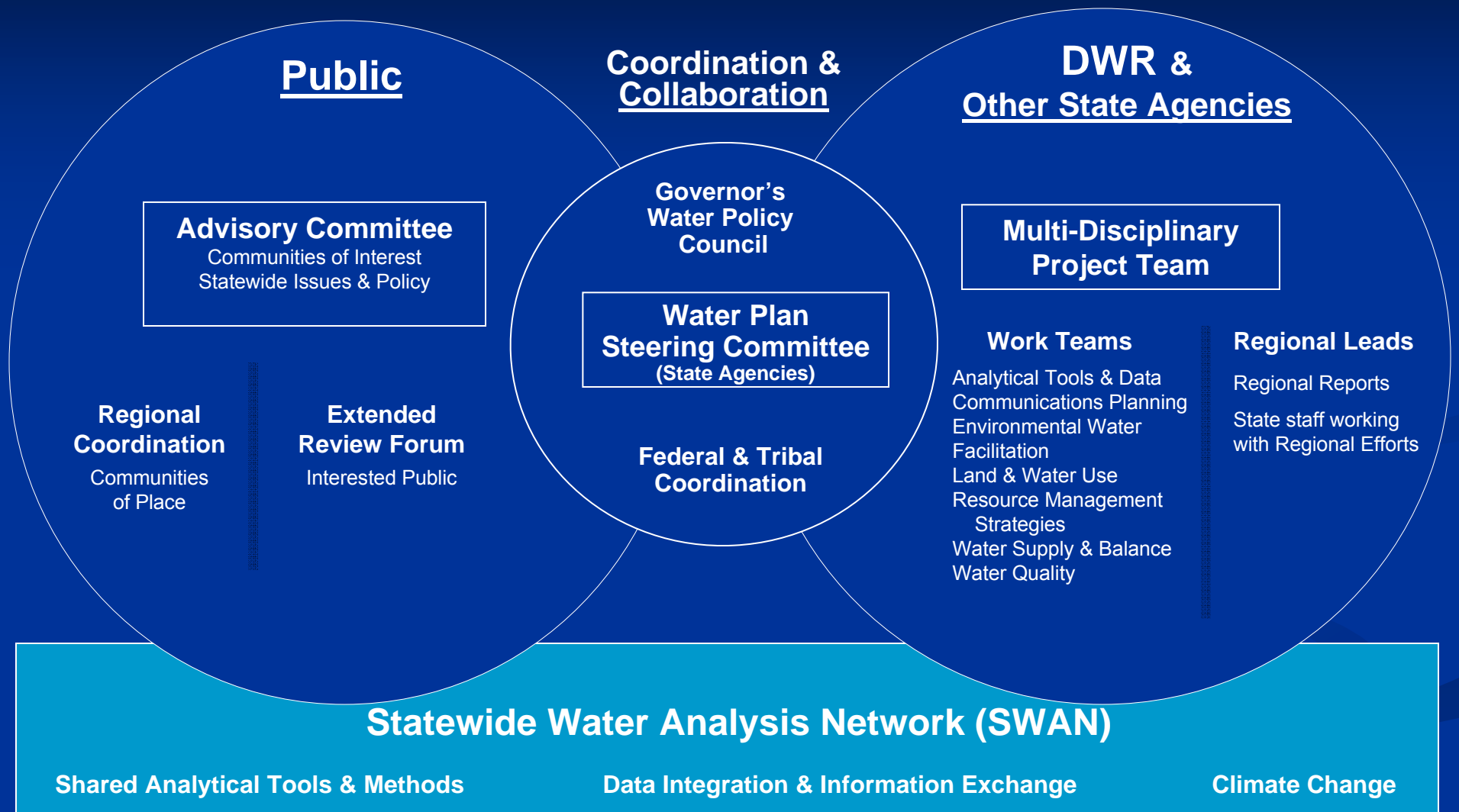
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Proposed Water Plan Schedule

Next Steps for Improving Quantitative Information

□ Develop Approach and Perform Quantitative Analysis for Next CWP

SWAN pilot studies

Consider results of SWAN pilot studies for CWP proposal

Results of IEUA study available

Develop proposal for next CWP through SWAN

Final proposal for next CWP

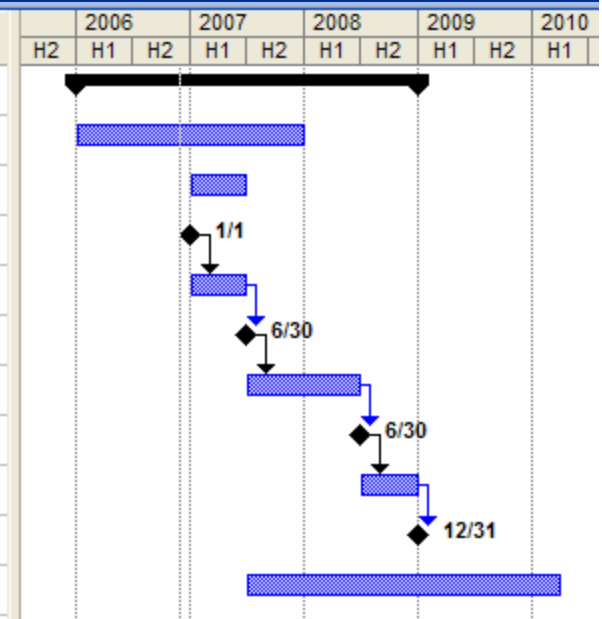
Regional data collection, model set up, and scenario runs

Initial results of scenario runs available for PRD

Refinement of scenario runs for PRD

Public Review Draft of CWP

Develop and implement contracts for longer term improvements



SWAN Activities During 2007

- Present results of completed pilot projects to SWAN
- Work with SWAN on implementing other pilot studies
- Conceptualize water management system
- Make proposal to SWAN on quantitative deliverables for the next Water Plan Update
- Work with SWAN to scope out longer term improvements



Reference Information

- <http://www.waterplan.water.ca.gov/cwpu2005>
 - Chapter 4, Volume 1, Update 2005
- <http://www.waterplan.water.ca.gov/tools>
- <http://www.waterplan.water.ca.gov/swan>
- <http://www.cwemf.org>
 - Strategic Analysis Framework ...



Questions

